

**PORTABLE, INTUSSUSCEPTIBLE EXERCISE APPARATUS
FOR STRETCHING AND KICKING**

5 **FIELD OF THE INVENTION**

 The present invention is directed to a stretching and kicking apparatus useful for practitioners of martial arts, kickboxing, aerobics, dance and other activities that require enhanced balance, leg strength and kicking capabilities. In particular, the present
10 invention is directed to a portable and adjustable training device that easily adjusts for a particular user's skill level and physical dimensions and also prevents injury by providing a stretching implement therewith.

BACKGROUND OF THE INVENTION

15 It is well documented that a sedentary lifestyle is a major risk factor for diseases that kill Americans and lower their quality of life. The health risk posed by physical inactivity almost equals that of cigarette smoking, high blood pressure and elevated cholesterol. Moderate daily physical activity can reduce substantially the risk of
20 developing or dying from cardiovascular disease, type 2 diabetes and certain cancers, such as colon cancer. Daily physical activity also helps to lower blood pressure and cholesterol, prevent or retard osteoporosis, reduce obesity and obesity-related ailments, reduce symptoms of anxiety and depression and alleviate symptoms of arthritis (see
25 *Physical Activity and Health*, 1996; *Call to Action to Prevent and Decrease Overweight and Obesity*, 2001, U.S. Department of Health and Human Services, the Office of the Surgeon General; and *Healthy People 2010*, 2001, the Office of Disease Prevention and Health Promotion). It is therefore no surprise that sales of fitness supplies and equipment
has escalated along with public consciousness of the benefits of physical training.

30 An inherent risk in any exercise regimen, particularly for exercise novices, is the risk of injury. Injury can lead to a decreased range of motion or flexibility such that if a muscle or tendon is torn or overstretched, it may be too painful to complete the normal motion of that body part. Stretching the muscles enables the elasticity of the yofilaments

to increase until their end-point is greater than it would have been without stretching. Over time, the ability to stretch increases, thereby enabling further joint extension without muscle or tendon tears. Stretching and flexibility are therefore integral components of injury prevention, muscle recovery and increased mobility for exercise enthusiasts.

When attempting to increase physical activity, many individuals encounter obstacles that impede training and ultimately dissuade further development of physical endurance and skill. Among the most prominent problems are the lack of access to convenient facilities and the need for a safe environment in which to be active. Many people reside in confined spaces that do not accommodate a lot of exercise equipment machines or else reside in areas where access to fitness facilities is limited or nonexistent. Also, although some municipalities provide parks and playgrounds with plentiful exercise space, such areas may not be proximate an individual residence and may present a safety hazard, particularly during evening and early morning hours when many people have the time to exercise outside of work. In addition, many people do not have the resources to purchase large exercise equipment, or they may not have the training to use such equipment although they have the desire to remain active. All of these deficiencies increase the likelihood that active individuals will overlook the importance of stretching and proper technique, thereby leading to increased injury rates and decreases in range of motion.

Several attempts have been made to provide compact exercise equipment that overcomes the above-cited problems. For example, related US Patent Nos. 5,997,451, 6,270,448 and 6,595,906 together disclose various embodiments of a leg stretch exercising device. In a preferred embodiment, the device includes a main support member having first and second end portions wherein the second end mounts upon a support surface such as a floor. The main support member further includes selectively positionable leg support members that engage corresponding mounting members. A user can engage one or more of the leg support members with corresponding mounting members and stretch each leg on the leg support members as desired. Multiple handle members may also be provided that are selectively positionable and provide gripping

surfaces for each of the user's hands, thereby increasing the user's stretching opportunities.

UK Patent Application No. 2,268,416 discloses an exercise apparatus having an elongate tubular support upon which a telescoping tube is rotatably mounted for rotation in a vertical plane. A support surface includes a socket to which the tubular support is mounted. The tubular support includes a locking telescoping member to which the telescoping tube is rotatably fastened. The telescoping tube is supported in cantilever fashion on the end of a bolt and is capable of rotating through 360° in a vertical plane. In use, the user lowers one free end of the telescoping tube and places a foot thereon. The user raises the foot by gripping the opposing extent of the telescoping tube and rotating the telescoping tube with the foot thereon. If the user exerts excessive downward force on the tube, the elongate support collapses so as to prevent the user from overextending the leg muscle.

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Although these devices address the need for proper stretching, none of them provides multiple functions for stretching and physical activity. In particular, none of the aforementioned devices trains kicking techniques so as to develop the leg strength, balance and accuracy that enhances overall physical endurance. Improved strength and balance further prevent injury during daily activities and improved accuracy enhances confidence and mental concentration. Also, these devices have limited portability so as to impede their use on a daily basis and thereby obviate any beneficial effect the devices may provide to the user.

It is therefore desirable to provide a stretching and kicking training apparatus having a compact and readily portable configuration. Such an apparatus is also desirably adjustable for adults, teens and children of various skill levels that engage in multiple physical activities.

SUMMARY OF THE INVENTION

It is an advantage of the present invention to provide a transportable and intussusceptible exercise apparatus for stretching and kicking.

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It is also an advantage of the present invention to readily adjust such exercise apparatus according to an individual users physical dimensions, skill level and range of motion.

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It is another advantage of the present invention to provide indicia on such an exercise apparatus to provide affirmative reinforcement of the user's progress.

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In accordance with these and other advantages, the present invention provides an exercise apparatus for kicking and stretching. The apparatus includes an elongate support member having opposed upper and lower free extents with a longitudinal body interposed therebetween and through which longitudinal axis passes. The body comprises one or more intussusceptible portions that are reciprocatingly slidable relative to one another and further relative to a lower body portion for height adjustment of the apparatus. The support member also includes a truss member disposed proximate the lower extent of the body and has two or more legs to stabilize the support member in an upright position along the longitudinal axis.

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The upper free extent of the support member supports a cross member thereon and in normal relation therewith. The cross member, which is disposed in generally a cantilever fashion so as to prevent rotation thereof, includes a limb support portion protruding from a top surface thereof and having a curvature to support a user's limb thereon. In a preferred embodiment, the cross member includes one or more releasably lockable telescoping members that are reciprocatingly slidable relative to one another.

The exercise apparatus of the present invention may also include at least one clamping member along the body that includes means for frictional engagement of adjacent intussusceptible portions. Such frictional engagement means may comprise a rotatable handle that frictionally engages a corresponding intussusceptible portion upon rotation thereof and relieves engagement with the intussusceptible portion upon opposite rotation thereof.

Various other advantages and features of the present invention will become readily apparent from the following detailed description, and the inventive features will be particularly evident from the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective view of the portable, intussusceptible exercise apparatus of the present invention in an operative configuration.

Figure 2 is a perspective view of the exercise apparatus of Figure 1 in a collapsed state suitable for transport.

Figure 3 is an exploded view of section 3 of Figure 1.

Figure 4 is an exploded view of a clamping member of the exercise apparatus of Figure 1.

Figure 5 is an exploded view of a cross member of the exercise apparatus of Figure 1.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The portable and intussusceptible exercise apparatus of the present invention and preferred embodiments thereof are described with reference to the figures, wherein like
5 reference numerals identify like elements.

Referring to Figures 1 to 5, exercise apparatus 10 comprises an elongate support member 12 having opposed upper and lower free extents 12a and 12b, respectively, with a longitudinal body 14 interposed therebetween and through which longitudinal axis 1
10 passes. Body 14 comprises intussusceptible portions 16 that are reciprocatingly slidable relative to one another and further relative to lower body portion 17 for height adjustment of apparatus 10. The number of intussusceptible portions 16 is not limited to that shown, and the length of each portion may be uniform or may vary in accordance with the age, physical dimensions, skill level and training goals of particular users (for instance, shorter
15 portions may be required for children and longer portions may be required for martial arts practitioners). Intussusceptible portions 16 may be fabricated from metal, plastic or any other material amenable to successful practice of the present invention, although a lightweight material is preferred.

Support member 12 desirably includes a truss member 18 disposed proximate
20 lower free extent 12b. Truss member includes two or more legs 20 that stabilize support member 12 in an upright position along longitudinal axis 1. Legs 20 are joined to leg connector 22 that is reciprocatingly slidable with respect to lower body portion 17 so as to retract legs 20 toward longitudinal axis 1 upon collapse of apparatus 10 (as shown in
25 Figure 3 and described hereinbelow). Truss member 18 may be any appropriate support device that enables collapse and transport of exercise apparatus 10. Such support devices are well known in the art.

Referring further to Figures 1 and 4, one or more clamping members 30 are
30 provided along portions of body 14 where each intussusceptible portion 16 accepts an adjacent intussusceptible portion 16 therewithin. Each clamp member 30 desirably

includes means for frictional engagement of an adjacent intussusceptible portion, such as rotatable handle 32 shown in Figure 4. Each handle 32 includes a stem 34 that frictionally engages a corresponding intussusceptible portion 16 upon rotation of handle 32. Upon elongation of body 14 via sliding movement of portions 16, the user rotates each handle 32 to ensure that apparatus 10 remains at the desired height. Should the user desire to adjust the height during a training session, the user easily rotates handle 32 in the opposite direction to relieve engagement with the intussusceptible portions, raises or lowers such members accordingly and again turns handle 32 to retain apparatus 10 at the adjusted height.

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Now referring to Figures 1 and 5, support member 12 supports a cross member 40 at upper free extent 12a in normal relation therewith. Cross member 40 is disposed in generally a cantilever fashion so as to prevent rotation thereof. Cross member 40 includes a limb support portion 42 protruding from a top surface thereof and having a curvature 42a to support a user's extremity thereon (for instance, a foot, leg or hand). Limb support portion 42 may be integral with cross member 40 or may be integrated with a cross bar clamp 44 that fastens cross bar 40 to support portion 12. In the alternative, limb support portion 42 may be slidable along a longitudinal extent x of cross member 40 so as to provide multiple locations for limb support and stretching. Cross member 40 may further include one or more telescoping members 45 in releasably locking formation relative to cross member 40. Telescoping members 45 of cross member 40 are reciprocatingly slidable relative to one another and may be locked at desired locations via clamp members similar to clamp members 30 described hereinabove. As a user improves his or her range of motion, the user can gradually extend such telescoping members and thereby enhance training by increasing the span over which the user's kick must clear apparatus 10.

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One or more of lower body portion 14, intussusceptible portions 16, cross member 40 and its telescoping members may include visual and/or tactile indicia denoting the height and span of apparatus 10 as appropriate. Such indicia may include actual height and length measurements or may include any desired code that indicates

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level of performance. The provision of indicia is particularly beneficial as affirmative reinforcement of the user's improved skill, balance and endurance, thereby encouraging further training of proper stretching and kicking techniques.

5 In use, a user can transport exercise apparatus 10 between locations in the collapsed configuration shown in Figure 2. In this configuration, members 16 and members 45 are retracted to reduce the overall height and span of apparatus 10. During set-up of the apparatus, the user sets apparatus 10 upon a support surface such as a floor and extends legs 20 of truss member 18 outward away from longitudinal axis 1 .

10 Extension of legs 20 causes leg connector 22 to reciprocatingly slide along lower body portion 14 toward lower free extent 12b. One or more support connectors 50 may be provided that include a locking mechanism to ensure that legs 20 remain extended during use.

15 After placement of apparatus 10 on a support surface, the user slides intussusceptible portions 16 upward, thereby raising cross member 40 to the desired height. If the user needs the adjust the height of apparatus 10 any time during the training session, the user easily rotates handles 32 to release intussusceptible portions 16 from engagement therewith. If cross member 40 includes telescoping members, the user

20 also adjusts such telescoping members to obtain the desired cross member span. Also, if limb support portion 42 is slidable, the user can adjust the position of limb support portion 42 to achieve deeper stretches at various angles. The user may employ indicia to determine the desired height and span of apparatus 10 and adjust apparatus 10 in view of the user's relative performance during prior training sessions.

25 Once apparatus 10 has been adjusted for height and span, the user can elect to begin stretching or kicking exercises. For stretching, the user places a foot or leg on limb support portion 42 and stretches accordingly. The user may alternatively place a hand on limb support portion for support during stretching of the legs and torso. As the user

30 improves the extent of the stretch, the user can elevate body 14 and/or slide limb support portion 42 along cross member 40 to attain more challenging stretch positions. For

kicking, the user selects the desired height and span around which the user wishes the kick to clear. For beginners, body 14 may remain at a low height to train balance and leg strength and to also accommodate the user's sense of body position. As the user's techniques improve, the user can adjust the height of body 14 to attain higher kicks and coordinate height with range of motion by also elongating cross member 40. Such training advantageously enhances muscle memory and increasingly focuses the user's attention to the power of the kick rather than the propriety of the technique.

The present invention therefore promotes the development of proper stretching and kicking techniques that enhance flexibility and helps users to avoid injury. The exercise apparatus of the present invention is an easily transportable and adjustable training tool that is appropriate for individuals of any age and activity level. This apparatus is easily transported among residential, commercial, educational and other installations without the need for installation and without impinging upon space constraints. The simple construction of the apparatus not only makes the device suitable for all types of users, but also reduces the temporal, material and labor costs associated with manufacturing. This device is therefore an affordable alternative to large exercise equipment having fewer beneficial features.

Various changes to the foregoing described and shown structures are now evident to those skilled in the art. The matter set forth in the foregoing description and accompanying drawings is therefore offered by way of illustration only and not as a limitation. Accordingly, the particularly disclosed scope of the invention is set forth in the following claims.